

The Impact of Perceived Group Success–Failure on Motivational Beliefs and Attitudes: A Causal Model

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Two models describing the theoretical relationship among the constructs of perceived group success–failure, individual and collective levels of job-specific efficacy and outcome expectancy, satisfaction, and organizational commitment were developed. Model 1 proposed that the causal relationship between group success–failure and subsequent attitudinal variables (satisfaction and organizational commitment) is completely mediated by efficacy and outcome expectancy variables. The second model proposed a direct causal link from perceived group success–failure to the attitudinal variables and omitted questionable causal paths from personal efficacy and collective outcome expectancy to the attitudinal variables. The competing models were subjected to structural equation path model analysis. The second model produced an adequate fit between theory and data. Implications for organizations are discussed.

The cliché “success breeds success” appears to enjoy a general acceptance in today’s business environment, but there is not a clear, theoretical definition of how a group’s work performance might affect its individual members’ work-related beliefs and expectations or how these beliefs might further influence subsequent levels of important attitudes such as work satisfaction and organizational commitment.

It has been demonstrated that knowledge of group performance, for which each member can claim partial credit (or accept partial responsibility), is salient information to group members. Binning and Lord (1980) provided evidence that information concerning a group’s performance had a greater impact on members’ perceptions of the nature of the group’s processes (e.g., success of communication, achievement of group goals) than did the actual nature of the processes themselves.

In his review of research on the effects of feedback on group task behavior, Nadler (1979) concluded that feedback on group performance could result in one of two effects on group members: (a) motivational effects that alter members’ levels of effort, and (b) cuing effects that provide strategies for group task performance. The current study focuses on the motivational effects of group performance, especially the nature of the belief and attitudinal changes that may form the foundation for subsequent levels of work motivation.

Zander (1977) also demonstrated the motivational functions of group-level outcomes. Summarizing from previous research on group motivation and performance, Zander concluded that the desire for group success increases as the group experiences prior success. This effect was described as being stronger in the positive direction than in the negative direction. In other words,

group motivation was found to be more likely to increase after a success than to decrease after a failure (Zander, 1971).

Though investigations into the phenomenon of “social loafing” indicate that the relationship between group-level performance and individual-level reactions may diminish as group size increases (Latané, 1986; Latané, Williams, & Harkins, 1979), it is nevertheless intuitive that group performance would influence members’ attitudes and subsequent behaviors within the group setting. This is also consistent with Shamir’s (1990) contention that an important determinant of motivation is the psychological identification with the group and internalization of group norms.

As direct outcomes of group success–failure, the variables of efficacy and outcome expectancy play a key role in the model proposed here. We define these variables in a manner consistent with Bandura’s (1977, 1986) definitions from the field of social psychology but with specific reference to work behaviors. *Efficacy* beliefs refer to judgments that individuals make concerning their ability to do whatever is required to successfully perform their jobs. *Outcome expectancy* beliefs refer to judgments of the consequences that work performance is expected to produce. The potential role of these constructs in motivation has recently received much attention. Gist (1987) described the importance of the efficacy variable to the understanding of organizational behavior. The importance of these beliefs to effective training efforts has recently been described (Frayne & Latham, 1987; Gist, Schwoerer, & Rosen, 1989; Latham, 1988; Latham & Frayne, 1989; Mathieu, Martineau, & Tannenbaum, 1993). Goldstein (1991) stated that “research on self cognitions such as self-efficacy will be very important in the next decade” (p. 545).

One direct outcome frequently described as being dependent on self-efficacy and outcome expectancy is task persistence (Bandura, 1986). The implications of this relationship for the prediction of subsequent work performance are clear. Individuals who believe they have the ability to succeed in the performance of a specific task are more likely to approach and persist in the performance of that task. Hellervik, Hazucha, and

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Schneider (1992) concluded that the "development of self-efficacy in clients is important to the success of most change interventions" (p. 865).

Performance is also determined by the individual's expectation that desired outcomes will occur as a result of successful performance of the task, and this expectation is potentially independent of self-efficacy beliefs. Even if an individual believes he or she has the ability to perform the task (self-efficacy), he or she is less likely to persist if there is no expected association between performance and desired outcomes (outcome expectancy).

Although most previous work has focused on the direct links between self-efficacy and task performance, there has been less definition of the probable impact of efficacy and outcome expectancy on important attitudinal variables that have been shown to have an impact on subsequent group success-failure. The purpose of this study was to define and test logical models that describe the system of important belief and attitudinal constructs that are affected by perceived group success and failure.

Success-failure is defined in a manner consistent with Bandura's social learning theory (Bandura, 1977, 1986) and consists of (a) group members' perceptions of the demonstrated ability of the group and its members to perform behaviors (collectively and individually) that are considered essential to the function of the group, and (b) beliefs that previous attainment of desired outcomes (both collective and individual) are contingent on the level of performance of the essential behaviors.

The initial links of the model are based primarily on Bandura's (1977, 1986) proposals concerning self-efficacy beliefs and outcome expectancy. The work of Bandura and others (Bandura, Adams, & Beyer, 1977; Cervone & Peake, 1986; Mathieu et al., 1993) suggests that the experience of personal success or failure in efforts to perform a task will affect subsequent expectations concerning personal ability to perform the task (self-efficacy beliefs) and expectations that future performance of the task will result in the attainment of desirable outcomes (outcome expectancy). The current model proposes that these principles will generalize to effects observed as a result of perceived group success-failure in a work setting; hence, perceived group success-failure will be positively correlated with measures of work-specific efficacy and outcome expectancy. The proposed model differentiates among four, second-stage outcome variables: (a) personal efficacy beliefs, (b) personal outcome expectancies, (c) collective efficacy beliefs, and (d) collective outcome expectancies. Although all four are individually held beliefs, *personal* variables refer to efficacy beliefs and outcome expectancies that individuals hold concerning their own individual abilities and likely performance contingencies. *Collective efficacy* refers to the beliefs that individuals hold concerning the ability of their group to successfully perform its work tasks. *Collective outcome expectancy* consists of the beliefs that individuals hold about the likely consequences their group will experience as the result of the group's performance of work tasks.

Although the concepts of efficacy and outcome expectancy are theoretically discrete (Bandura, 1977, 1986), they generally correlate at a significant level (Bandura, 1986). Significant correlations are also expected among the personal and collective levels of these variables. One's own level of perceived efficacy

and outcome expectancy necessarily contribute to the group's collective efficacy and outcome expectancy. Outcome expectancies at the personal and group levels are expected to correlate given that everyone in the group is typically subject to the same general organizational reward system. Collective efficacy and collective outcome expectancy may have a direct impact on personal efficacy and personal outcome expectancy variables via social learning processes (Bandura, 1971).

Bandura's (1977) theory provides a basis for expecting group-level experiences to have an impact on individual-level beliefs. Previous results confirm the suggestion that seeing or visualizing peers performing successfully can raise self-percepts of efficacy because observers conclude that they too may possess the capabilities to master comparable activities (Bandura, Adams, Hardy, & Howells, 1980). In a training setting, Tannenbaum, Mathieu, Salas, and Cannon-Bowers (1991) found that "training fulfillment" was positively related with subsequent levels of self-efficacy, commitment, and motivation. The proposed impact of group success on individuals' beliefs concerning their group's ability (collective efficacy) is supported by Shea and Guzzo's (1987) findings that performance feedback enhanced subsequent levels of the construct of *group potency*, which was defined as the belief that the group could effectively carry out its work.

The proposed link between group-level success-failure in obtaining desired outcomes and subsequent individual-level beliefs concerning the perceived contingency between performance and outcomes is supported by Sundstrom, DeMeuse, and Futrell's (1990) conclusion that "team performance may hinge on desirable consequences to individual members contingent on the whole team's performance" (p. 124). They referred to this as "outcome interdependence" (p. 124).

Potential links from the personal efficacy variable to job satisfaction and organizational commitment are harder to predict. Lawler and Porter (1967) reported a strong relationship between feedback on performance and subsequent levels of job satisfaction. They hypothesized that high general levels of satisfaction were probably due to workers' beliefs concerning their performance of job tasks. Whether the levels of success reported to the workers had a direct impact on satisfaction, or whether the feedback increased efficacy beliefs that then, in turn, produced satisfaction cannot be determined by these results. Greenberg and Pyszczynski (1986) found that after they induced low-efficacy beliefs through a manipulated failure, subjects exhibited high levels of "depressive self-focus," which contributed to a dissatisfying mental state. These results indicate that failure can indeed have an effect on levels of both efficacy and satisfaction, but whether the impact of performance on satisfaction is direct or is moderated by the efficacy variable is unknown.

In addition to satisfaction, there are implications for commitment to the group and to the organization as well. Efficacy beliefs have been found to positively correlate with subsequent goal setting (Locke, Frederick, Lee, & Bobko, 1984; Markus & Wurf, 1987). Given that organizational commitment is largely defined in reference to acceptance of and willingness to work for organizational goals, levels of efficacy (personal and collective) should be related to subsequent willingness to internalize organizational goals.

Nevertheless, although there is intuitive appeal and some empirical support for a positive, causal link from work-related self-efficacy to satisfaction and commitment, there is also reason to believe that efficacy may not always have a positive, causal impact on either satisfaction or commitment. Using an *N* of 6,963 military personnel, Carter (1991) reported near-zero to small, negative correlations among Armed Services Vocational Aptitude Battery Subtest scores and scores on the Army Job Satisfaction Questionnaire obtained 18 to 24 months later. Given that actual ability could be expected to contribute directly to performance, which subsequently contributes to efficacy beliefs, these results do not support the hypothesis that self-efficacy causes satisfaction. Results from research on equity models such as Lawler's facet satisfaction model (Lawler, 1973) and Adams's equity theory (Adams, 1965) support the prediction of a negative relation between perceived ability (personal self-efficacy) and subsequent satisfaction and commitment. For example, high levels of self-perceived skill and ability may increase workers' perceptions of the value of their "inputs" to the organization, making it more likely that they will perceive an imbalance in their input-output ratio relative to others in the organization. This would lead to a state of dissatisfaction. Especially given that most organizations (including those involved in this study) do not generally provide tight performance-pay contingencies, workers who perceive themselves as capable of performing at higher levels "are likely to be dissatisfied, complain, look for internal transfers, and mistrust the organization" (Lawler & Jenkins, 1992, p. 1013).

Expectations concerning a proposed link between personal outcome expectancy and the satisfaction and commitment variables appear more clear-cut. Although both equity theory (Adams, 1965) and Lawler's facet model (Lawler, 1973) predicted that it is possible for workers to receive too much, which results in guilt and subsequent dissatisfaction, this particular hypothesis has never received solid empirical support (Saal & Knight, 1988). Wall and Payne (1973) provided evidence that, rather than the difference between the current outcomes and expected outcomes, it is simply the perception of the level of outcomes that best predicts satisfaction.

With regard to the link between personal outcome expectancy and organizational commitment, individuals are drawn to, identify with, and are more likely to intend to stay with groups (organizations) that consistently provide valued outcomes contingent on expected behavior. Grusky (1966) found commitment related to the extent that employee expectations were met. Buchanan (1974), Hrebiniak (1974), and Steers (1977) all found commitment to be significantly related to "organizational dependability," or the extent to which the organization could be counted on to look after employee interests. Where expectations had been realized, commitment levels were higher.

A positive causal link from collective efficacy to satisfaction and organizational commitment also appears highly probable. Cialdini et al. (1976, p. 406) described what they termed "basking in reflected glory," a satisfying state resulting from identification with a successful group. Snyder, Higgins, and Stuckey (1983) described and measured the opposite phenomenon, which they referred to as "cutting off reflected failure" (p. 383). Snyder, Lassegard, and Ford (1986) measured both basking in

reflected glory and cutting off reflected failure within the context of group performance. Their results suggest that people are more satisfied with membership in and association with groups that are perceived as efficacious. Results from research investigating equity models (e.g., Adams, 1965; Lawler, 1973) support the prediction of a positive relation between the inputs of co-workers and subsequent levels of satisfaction. If people perceive their work group as efficacious, their evaluation of their own abilities (inputs) and the equity of their own personal outcomes are more likely to seem satisfactory. Dissatisfaction and intent to withdraw from a group or an organization would be more likely given a perception that the group was of generally low ability.

The potential causal link between collective outcome expectancy and subsequent levels of satisfaction and organizational commitment is difficult to predict. Although an abundance of research has investigated the results of perceived personal outcomes, very little is known about the results of perceived group outcomes. Pritchard, Jones, Roth, Stuebing, and Ekeberg's (1988) finding of increased satisfaction in aviation maintenance units after introduction of a group incentive plan that strengthened the link between group success-failure and group-level outcomes supports the expectation that group outcome expectancy may be positively related to satisfaction. Nevertheless, it seems logical to expect group-level outcome contingencies to be less salient than personal outcome contingencies when it comes to the determination of personal levels of satisfaction and commitment to the organization providing the rewards. In addition, results from research based on equity models (e.g., Adams, 1965; Lawler, 1973) suggest a negative correlation between rewards for peers (which would contribute to collective outcome expectancy) and subsequent satisfaction with personal input-output ratios.

The model also includes a positive predictive relationship between satisfaction and organizational commitment (as previously reported by Mowday, Porter, & Steers, 1982; Williams & Hazer, 1986). Results obtained by Mathieu (1991) support the use of satisfaction as a cause of commitment, even though the two constructs may have a somewhat reciprocal relationship. The model also implies that unique variance in organizational commitment will be predicted by the efficacy and outcome expectancy variables.

Given the nature of the theoretical and empirical evidence contributing to the current model, significant uncertainty exists concerning two critical aspects: (a) Should causal paths be predicted from the intermediate variables of personal efficacy and collective outcome expectancy to the attitudinal variables of satisfaction and organizational commitment? and (b) Is the impact of group success-failure on the attitudes of satisfaction and commitment direct or mediated through the efficacy and outcome expectancy belief variables? Given this uncertainty, we proposed two hypothetical models. Model 1 and Model 2 are presented in Figure 1 and Figure 2, respectively.

Both models assume causal paths from group success-failure to the four efficacy and outcome expectancy belief variables. Model 1 assumes that positive correlations previously obtained between group success-failure and the attitudinal variables of satisfaction and commitment are mediated by all four efficacy and outcome expectancy variables. Consequently, causal paths

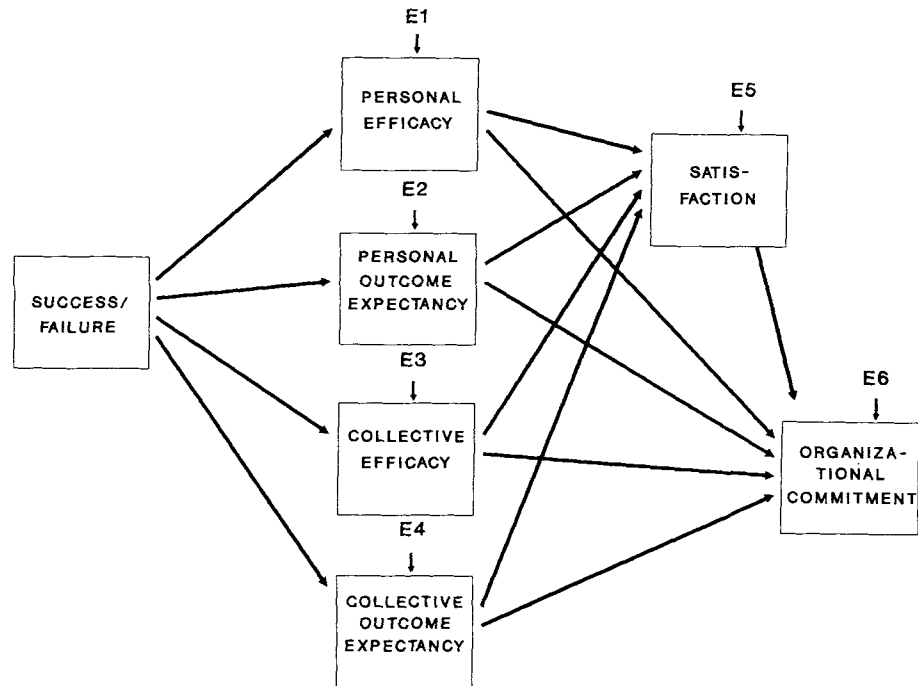


Figure 1. Variables and causal paths representing the proposed theoretical Model 1. E = Error term.

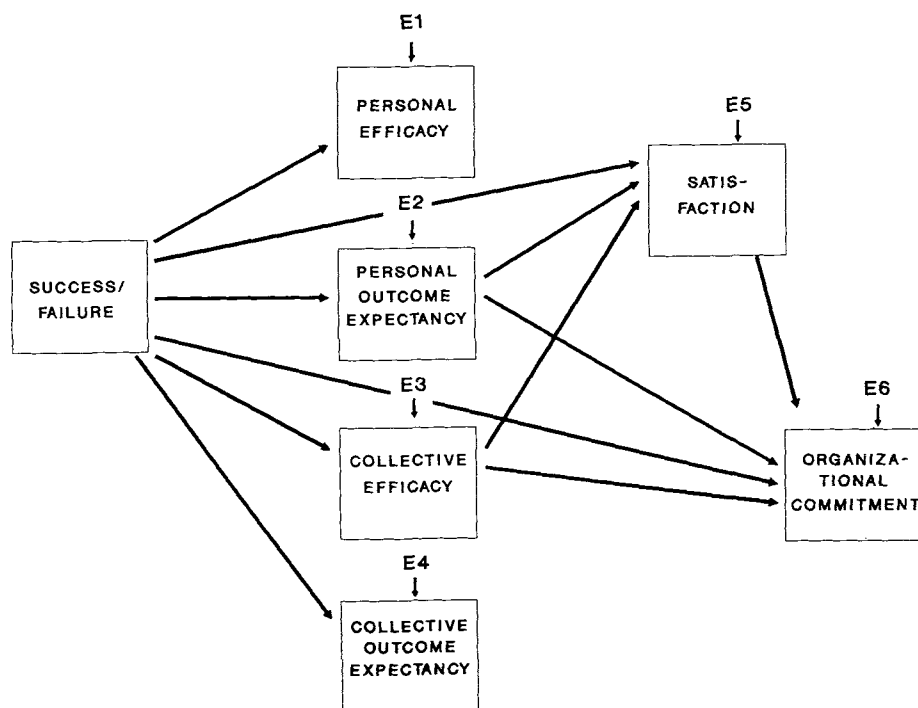


Figure 2. Variables and causal paths representing the proposed theoretical Model 2. E = Error term.

are included from all four efficacy and outcome expectancy variables to the attitudinal variables of satisfaction and organizational commitment, with no direct paths from group success-failure to satisfaction or commitment. Consistent with evidence and theoretical expectations that suggest personal efficacy and collective outcome expectancy would not directly affect satisfaction or commitment, Model 2 proposes direct paths from group success-failure to satisfaction and commitment (necessary to account for observed positive correlations among these variables) and omits the paths from personal efficacy and collective outcome expectancy to both attitudinal outcomes.

Method

Subjects

Subjects included 55 employees (in 13 work groups) of the student union at a large, midwestern university, 91 employees (in 14 work groups) of a state cooperative extension service for a midwestern state, and 334 employees (in 52 work groups) of a large, midwestern university.

A *group* was defined as a unit of employees with a common identity and some level of dependence on each other for the achievement of common goals. The sample covered a broad range of job types and organizational levels. Average group size was approximately 6 members.

Measures

Five scales using Likert-scaled items that were previously developed were revised for use in this study (Riggs, 1989; Riggs, Warka, Babasa, Betancourt, & Hooker, 1994). Item responses could range from 1 to 6 and were anchored as follows: 1 = *strongly disagree*, 2 = *disagree*, 3 = *disagree somewhat*, 4 = *agree somewhat*, 5 = *agree*, and 6 = *strongly agree*. A 9-item Group Success-Failure Scale, a 10-item Personal Efficacy Beliefs Scale, an 8-item Personal Outcome Expectancy Scale, a 7-item Collective Efficacy Beliefs Scale, and a 6-item Collective Outcome Expectancy Scale were used in the current study. The actual scales are included in the Appendix. The scales demonstrated good internal consistency reliability (Cronbach's alpha ranged from .81 to .87) and predictive validity with measures of subsequent performance variables in a pilot study (Riggs, 1989). Also, factor analysis of the scales clearly demonstrated the conceptual discreteness of personal efficacy, personal outcome expectancy, collective efficacy, and collective outcome expectancy (Riggs, 1989; Riggs et al., 1994). Nevertheless, consistent with theoretical expectations (Bandura, 1986), all scales covary significantly. In previous applications of the scales, Pearson correlation coefficients among these four scales have ranged from .10 to .50 (Jex & Gudanowski, 1990; Riggs et al., 1994).

Regarding the self-efficacy scales, there has been previous discussion and work with task-specific versus generalized self-efficacy (Wang & Richarde, 1988). General self-efficacy scales have demonstrated valid association with initiation and persistence in behavior, as well as with other constructs theoretically linked with self-efficacy beliefs (Sherer & Adams, 1983; Sherer & Maddux, 1982; Tipton & Worthington, 1984). Such work supports the theoretical expectation that task-specific efficacy expectancies will generalize to actions other than the target behavior (Bandura et al., 1977, 1980). However, most theory related to self-efficacy beliefs is appropriately based more on task-specific beliefs than on general expectations (Gist, 1987). Wang and Richarde (1988) provided evidence that task-specific measures could outperform a general efficacy scale in the prediction of performance on cognitive tasks.

With the scales used in the current study we attempted to capture the best of both worlds. Although the scales were constructed to be applicable to any work situation, the directions in each scale instructed the

subject to "think about your ability to do the tasks required by your job. When answering the following questions, answer in reference to your own personal work skills and ability to perform your job." Although it is true that different levels of efficacy beliefs may still exist for different performance dimensions required within each individual's job, these instructions focused subjects on abilities specific to their work performance.

Satisfaction was measured with the 20-item Minnesota Satisfaction Questionnaire—Short Form (Weiss, Dawis, England, & Lofquist, 1967). Though subsets of items from this scale have been proposed to represent indexes of intrinsic and extrinsic satisfaction, use of the total scale as a general measure of job satisfaction has been advised (Weiss et al., 1967). Alpha reliabilities reported for the general scale have ranged from .74 to .92 (Weiss et al., 1967). Validity coefficients have demonstrated its conceptual similarity to the Job Descriptive Index (Weiss et al., 1967).

Organizational commitment was measured with the Organizational Commitment Questionnaire (OCQ; Mowday, Steers, & Porter, 1979). This 15-item scale taps three aspects of the definition of organizational commitment: belief in group goals, intent to stay with the organization, and willingness to work for group goals. Reliability coefficients from early applications ranged from .82 to .93 (Mowday & Lee, 1986). High validity coefficients are reported with the Sources of Organizational Attachment Questionnaire and with independent ratings of employee commitment provided by supervisors (Mowday & Lee, 1986). Correlations between the OCQ and measures of job satisfaction are typically low enough to indicate an acceptable level of discriminant validity (Mowday & Lee, 1986). Work by Brooke, Russell, and Price (1988) further supports the contention that satisfaction and organizational commitment are distinct concepts.

Level of Analysis

With the exception of the analysis of common method variance, all analyses in this study were conducted at the individual-subject level. The group success-failure variable is each individual's perception of the recent success of the work group. Though group members' evaluations might be accrued to provide a reliable group-level indicator of true group success-failure, we decided that each individual's perception was what would most predictably drive his or her own resulting beliefs. The use of the term *collective* in reference to levels of efficacy and outcome expectancy is not meant to imply that these are measures of the group's accumulated perceptions. They are individually held beliefs about the groups to which each subject belongs. Consistent with the practice of Rousseau (1985), all variables were measured at the individual level; consequently, all variables were analyzed at the individual level.

Nevertheless, given that individuals in common work groups should share some of the same "reality," it is logical to expect within-group membership to account for significant variance in the measures of group success-failure, collective efficacy, and collective outcome expectancy. For a validity check of this expectation, we computed η^2 between group membership and each of these three variables; these computations showed that group membership accounted for significant proportions of variance for these variables (success-failure, $\eta^2 = .45$; collective efficacy, $\eta^2 = .44$; collective outcome expectancy, $\eta^2 = .30$).

Assessment of Common Method Bias

Because all measures involved the collection of survey data, we divided the members of 23 groups into three separate units to enable an assessment of the potential occurrence of common method bias (Rousseau, 1985). Groups for this analysis were selected from all three of the organizations represented in the sample. We selected larger groups from each to ensure adequate response rates from all three units. The first

unit within each of these divided groups acted as raters of department success-failure. The second unit provided measures of efficacy beliefs and outcome expectancies. The third unit provided measures of only job satisfaction and organizational commitment. The members of the remaining 56 groups responded to all measures. Group means were then computed for all variables. Subsequent analyses testing for common method variance were conducted at the group level.

We assessed the extent to which common method variance appeared to be occurring by comparing the magnitude of univariate correlations obtained separately from groups in which individuals responded to all scales with data from groups in which individuals contributed scores in Units 1, 2, or 3 as described above. If common method variance contributed significantly to the observed relationships among variables, the magnitudes of the resulting r s should be significantly larger for those derived from those groups in which all members responded to all scales.

The obtained r s were transformed to Z scores (via Fisher's r -to- Z transformation), and the resulting Z difference scores were tested for statistical significance with the test statistic recommended by Hays (1988). The results are reported in Table 1. Only one of the differences (involving the correlations obtained between perceived success-failure and organizational commitment) was statistically significant at the $p = .05$ level. One significant result in 15 tests is approximately what would be anticipated as the alpha error rate. Three of the 15 differences were in the direction opposite to the one that would be expected if common method variance were inflating the correlations. These results indicate that responses to specific measures and the subsequent correlations were not dependent on, or primed by, exposure to the other measures obtained; consequently, measures from all groups were combined for the final analyses.

Analyses

Given the early stage of model development, rigorous, causal tests of each of the model's hypothesized relationships would seem pretentious

Table 2
Descriptive Statistics for Scale Scores

Scale	<i>M</i>	<i>SD</i>	Cronbach's α
Group Success-Failure	44.50	6.06	.81
Personal Efficacy	49.16	6.25	.80
Personal Outcome Expectancy	31.77	7.34	.82
Collective Efficacy	32.98	6.13	.84
Collective Outcome Expectancy	31.40	3.47	.71
Satisfaction	77.89	11.08	.89
Organizational Commitment	76.57	15.13	.87

without preliminary investigation of the models. Though a cross-sectional, correlational analysis could not provide conclusive evidence for the causal relationships proposed by the models, it did provide preliminary evidence of the plausibility of the models. Univariate correlations were initially computed and assessed. Given that the correlations supported the potential viability of the models proposed, we then subjected each model to structural equation path model analysis using the EQS software package developed by Bentler (1992).

Results

Means, standard deviations, and reliability coefficients for all scales are reported in Table 2. Distributions of scores from all scales closely approximated normal, and all scale reliabilities were acceptable (ranging from .71 to .89).

Obtaining data in a manner that made the assessment of common method bias possible meant that not all subjects responded to all scales. Slightly more than a third of the total potential N for subsequent analyses was sacrificed because of this procedure. In order to maximize information available from the remaining sample, we evaluated the use of pairwise rather than listwise deletion in the computation of correlations. The full correlation matrix of scale scores is presented in Table 3. Correlations obtained by both pairwise (lower, left diagonal) and listwise (upper, right diagonal) deletion of missing values are reported. Given that the corresponding correlations were nearly identical in every case, in all subsequent analyses we used the correlations based on pairwise deletion. Because covariances were used for input in the structural equation analysis, standard deviations obtained for both the pairwise and listwise procedures are included so that each covariance matrix can be reproduced.

The first stage of the model received good correlational support. Group success-failure was predictive of personal efficacy beliefs ($r = .38, p < .001$), personal outcome expectancy ($r = .41, p < .001$), collective efficacy beliefs ($r = .55, p < .001$), and collective outcome expectancy ($r = .49, p < .001$). Correlations at the second stage of the model also provided good support. Though the correlations between satisfaction and all four proposed predictors were significant (personal efficacy, $r = .19, p = .003$; personal outcome expectancy, $r = .60, p < .001$; collective efficacy, $r = .45, p < .001$; and collective outcome expectancy, $r = .36, p < .001$), the relationship between personal efficacy and satisfaction was low. These four intermediate variables were also significantly correlated with organizational commitment (personal efficacy, $r = .16, p = .008$; personal outcome expectancy, $r = .58, p < .001$; collective efficacy, $r = .50, p < .001$; and

Table 1
Pearson Correlations From Groups Completing Subsets of Scales and Groups Completing All Scales With Z Tests for Significant Differences

Scale	Subsets (<i>n</i> = 23)	All (<i>n</i> = 56)	<i>Z</i> test
Group Success-Failure with			
Personal Efficacy	.22	.37	0.08
Personal Outcome Expectancy	.45	.41	0.19
Collective Efficacy	.47	.66	1.08
Collective Outcome Expectancy	.31	.56	0.35
Satisfaction	.31	.56	1.19
Organizational Commitment	.15	.61	2.13*
Satisfaction with			
Personal Efficacy	-.14	-.09	0.12
Personal Outcome Expectancy	.60	.70	0.66
Collective Efficacy	.53	.48	-0.26
Collective Outcome Expectancy	-.02	.28	1.17
Organizational Commitment with			
Personal Efficacy	.01	-.12	-0.50
Personal Outcome Expectancy	.63	.63	0.00
Collective Efficacy	.57	.64	0.42
Collective Outcome Expectancy	.22	.36	0.58
Satisfaction	.71	.80	0.88

* $|1.96|$ represents a significant difference given the following test statistic: $\frac{Z_2 - Z_1}{\sigma(Z_1 - Z_2)}$.

Table 3

Pairwise Correlations and n Values (Lower Diagonal) and Listwise Correlations (Upper Diagonal, n = 189)

Scale	1	2	3	4	5	6	7
1. Group Success-Failure							
<i>r</i>	—	.33	.43	.54	.48	.46	.63
<i>n</i>	300						
2. Personal Efficacy							
<i>r</i>	.38	—	.11	.10	.33	.22	.17
<i>n</i>	218	297					
3. Personal Outcome Expectancy							
<i>r</i>	.41	.12	—	.30	.32	.60	.60
<i>n</i>	224	281	302				
4. Collective Efficacy							
<i>r</i>	.55	.18	.32	—	.41	.43	.49
<i>n</i>	230	281	286	306			
5. Collective Outcome Expectancy							
<i>r</i>	.49	.32	.32	.41	—	.36	.37
<i>n</i>	230	287	292	301	312		
6. Satisfaction							
<i>r</i>	.54	.19	.60	.45	.36	—	.76
<i>n</i>	221	211	212	226	225	298	
7. Organizational Commitment							
<i>r</i>	.61	.16	.58	.50	.37	.74	—
<i>n</i>	229	219	222	231	233	288	314
<i>SD_{PW}</i>	6.06	6.25	7.34	6.13	3.47	11.08	15.13
<i>SD_{LW}</i>	5.20	6.17	7.38	5.97	3.51	11.22	15.23

Note. All correlations were significant at the $p < .05$ level. Pairwise (PW) and listwise (LW) standard deviations are provided so that covariance matrices may be replicated.

collective outcome expectancy, $r = .37$, $p < .001$), but, once again, personal efficacy produced a weak correlation. As predicted, the correlation between satisfaction and organizational commitment was strong ($r = .74$, $p < .001$).

Assessment of Multicollinearity

To provide a concrete assessment of the potential threat of multicollinearity in the matrix produced by the predictor variables utilized in the path analysis, we computed Haidtovsky's heuristic chi-square statistic (Rockwell, 1975). The results, $\chi^2_{15}(N = 211) = 93.01$, indicated that the probability of multicollinearity was less than .001.

Structural Equation Path Model Analysis

We conducted structural equation path model analysis using the EQS software package (Bentler, 1988, 1992). Consistent with the work of Billings and Wroten (1978), we corrected original correlations for attenuation related to measurement unreliability by using the formula suggested by Ghiselli, Campbell, and Zedeck (1981):

$$r_{x_{\infty}y_{\infty}} = \frac{r_{xy}}{\sqrt{r_{xx}r_{yy}}},$$

where $r_{x_{\infty}y_{\infty}}$ is the correlation coefficient corrected for unreliability in both the predictor and criterion variables, r_{xy} is the original correlation coefficient, r_{xx} is the alpha coefficient of reliability for the predictor variable, and r_{yy} is the alpha coefficient of reliability for the criterion variable.

The covariance matrix produced from the corrected correlations among the seven variables in the model was used as the data input. Because there were theoretical and empirical grounds for expecting the four intermediate variables (personal efficacy, personal outcome expectancy, collective efficacy, and collective outcome expectancy) to correlate significantly with each other rather than to function as orthogonal variables, residuals among these four variables were allowed to correlate. The resulting standardized path coefficients and error coefficients for Model 1 are shown in Figure 3. We computed chi-square, the Bentler-Bonett normed fit index (NFI) the Bentler-Bonett non-normed fit index (NNFI), and the comparative fit index (CFI) to assess the overall fit of the model to the actual data (Bentler, 1992).

The obtained chi-square ($df = 6$, $N = 211$) of 56.45 was statistically significant ($p < .001$), large relative to the degrees of freedom, and, therefore, indicative of a poor fit (Bentler, 1992; Jöreskog & Sörbom, 1988). Goodness-of-fit indices (NFI = .94, NNFI = .80, CFI = .94) were mixed but suggested room for improvement in the overall fit (Bentler, 1992). Assessment of the standardized residuals and results of the Wald test (Bentler, 1992) indicated that the addition of paths from group success-failure directly to satisfaction and from group success-failure directly to organizational commitment would significantly improve the fit. Assessment of the standardized path coefficients and the Lagrange multiplier test (Bentler, 1992) suggested that four paths were inappropriate. The four weakest paths (in descending order) were (a) personal efficacy to commitment, (b) collective outcome expectancy to commitment, (c) collective outcome expectancy to satisfaction, and (d) personal efficacy to satisfaction.

Chi-Square ($df = 6$) = 56.45 ($p < .001$)

Bentler-Bonett NFI = .94

Bentler-Bonett NNFI = .80

Comparative Fit Index = .94

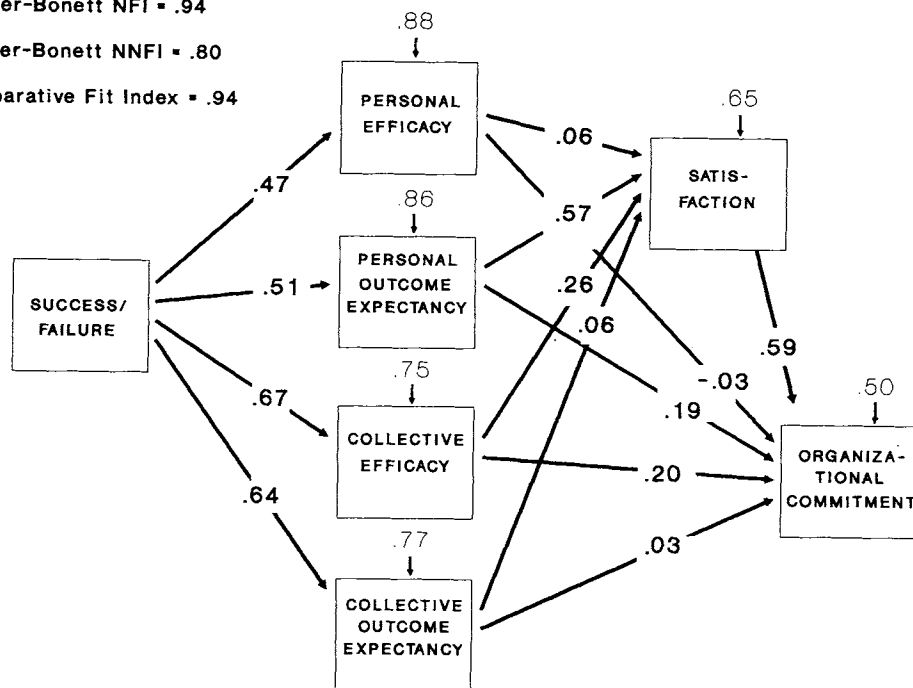


Figure 3. Results of the structural equation path model analysis of Model 1. NFI = normed fit index; NNFI = non-normed fit index.

Results obtained from the structural equation analysis of Model 2 are presented in Figure 4.

The chi-square ($df = 8$, $N = 211$) for the second model was 12.04 ($p = .15$). The insignificance of the chi-square indicates a good fit between this model and the data (Bentler, 1992; Jöreskog & Sörbom, 1988). The goodness-of-fit indices (NFI = .99, NNFI = .99, and CFI = .99) all indicated that the second model fit the data well. Assessment of the standardized residuals and results of the Wald test (Bentler, 1992) suggested the possible addition of a path from personal efficacy to organizational commitment, but the standardized residual was not especially large. Assessment of the standardized path coefficients and results of the Lagrange multiplier test (Bentler, 1992) did not indicate the need to drop any of the proposed paths. Though all paths were statistically significant, the weakest paths in the model were from (a) collective efficacy to organizational commitment, and (b) collective efficacy to satisfaction.

Discussion

Although the models shared many common paths, the distinctions between them are important for subsequent research and potential organizational applications. The first important difference is that group success-failure played a direct, dominant role in the determination of all belief and attitudinal variables in the better fitted model. The experience of success-failure within one's work group positively contributed to (a) beliefs about personal ability, (b) beliefs about the ability of one's group, (c) the perceived links between individual performance

and rewards, (d) the perceived links between group performance and group rewards, (e) work satisfaction, and (f) organizational commitment. This truly suggests that "success breeds success" and implies that failure must surely be difficult to overcome.

The direct impact of group success-failure on satisfaction and organizational commitment that occurred independent of intervening cognitive variables may be explained by Hackman's (1992) discussion of the impact of "ambient stimuli" within groups that result from previous experiences with or in the group. These "stimuli" subsequently serve to produce motivational affective states. In Model 2, previous success-failure (which becomes associated with the group) serves as the ambient stimulus specified. Hackman (1992) suggested that ambient stimuli may be "directly satisfying (or frustrating)" (p. 207). In reference to commitment to the organization, Hackman further stated that when group members find the ambient stimuli associated with the group rewarding, they come to "share a stake in maintaining its existence and viability" (p. 207). This is consistent with this study's definition of commitment.

It is also possible that direct links from group success-failure to satisfaction and commitment were necessary to produce a fit because other potentially important mediating cognitive variables were omitted from the model. One specific revision could be based on recent work by Mone and Baker (1992). Mone and Baker found attribution theory useful in refining the causal links from experienced performance (most closely approximated in the current study by group success-failure) to efficacy,

Chi-Square (df = 8) = 12.04 (p = .15)

Bentler-Bonett NFI = .99

Bentler-Bonett NNFI = .99

Comparative Fit Index = .99

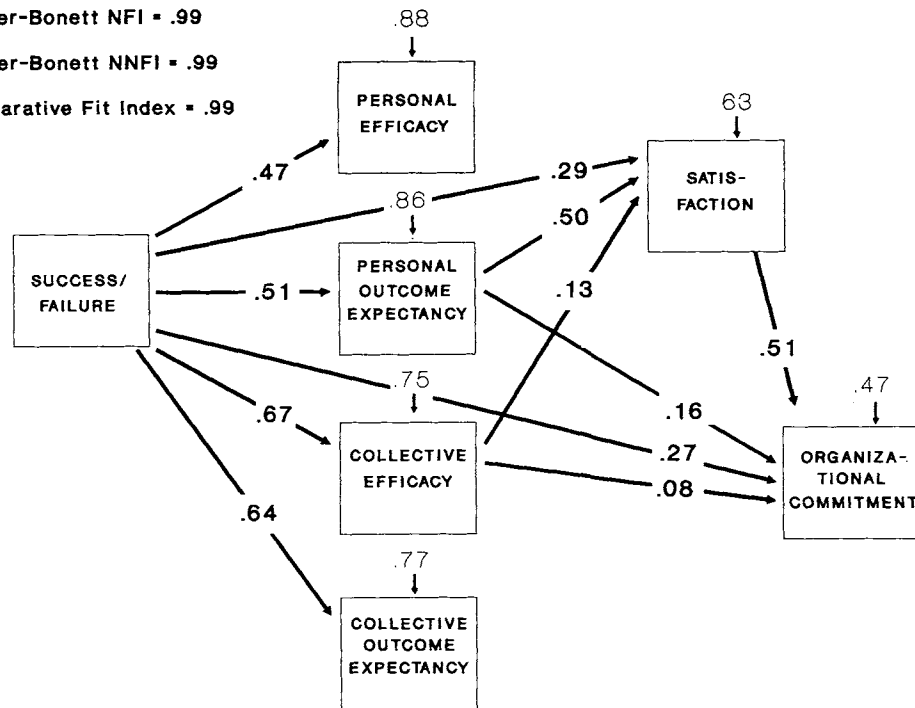


Figure 4. Results of the structural equation path model analysis of Model 2. NFI = normed fit index; NNFI = non-normed fit index.

expectancy, and satisfaction variables. Internal-external attributions for the performance were found to significantly moderate subsequent levels of satisfaction. A revision of the current model that could include this result might propose an initial link from group success-failure to an intermediate internal-external attribution variable. Because they experience a greater sense of responsibility for performance, those making internal attributions would experience a more direct effect on satisfaction. Alternatively, those making external attributions for the performance (potentially to people or circumstances in the organization around them) might experience the impact more in reference to their level of commitment to the organization. Mone and Baker also found that a stable-unstable attribution variable significantly moderated the effect of performance on efficacy and expectancy. Consequently, the addition of a stable-unstable attribution variable might further refine the current model's proposed links between group success-failure and the subsequent impact on efficacy and outcome expectancy variables (both personal and collective). Those making stable attributions related to the performance would be expected to experience a direct, positive impact on subsequent beliefs variables, whereas those making unstable attributions would experience little effect.

In any case, the strength of the causal paths between group success-failure and all subsequent variables in the current model should motivate organizations to cultivate success experiences, as well as perceptions of group success, among their employees. This might be accomplished by careful planning

and the establishment of realistic goals that enable groups to experience success. Because "planning for" and causing group success experiences to occur are not always possible in work organizations, positive experiences might be maintained, in part, by strategies designed to affect perceptions of success independent of actual levels of overall group performance. This is not meant to imply that deception should be utilized and that failing groups should somehow be convinced that they are succeeding, but managers should work to recognize and reward positive outcomes and progress toward success whenever they occur.

In the best-fitting model, paths were not proposed from personal efficacy to any subsequent variables. Though self-efficacy has generally been found to be positively deterministic of task persistence and performance, this result supports the general conclusion that it is not a significant antecedent (positive or negative) of attitudes concerning the performance of work tasks or of commitment to the organization for which these tasks are performed. This is consistent with Carter's (1991) review of the literature in which he found that most studies attempting to identify a link between "ability" and satisfaction reveal nonsignificant or small negative relationships. Given the conceptual association that must exist between self-efficacy and ability, the failure of efficacy to link with satisfaction or commitment might have been anticipated.

The decision to include causal paths from collective outcome expectancy to the attitudinal variables in Model 1 but not in Model 2 was based primarily on a general lack of empirical ev-

idence concerning the nature of these links. Although univariate correlations of collective outcome expectancy with satisfaction and organizational commitment were all significant and of moderate effect size (Cohen, 1988), any impact on attitudes accounted for by collective outcome expectancy was apparently redundant with that of other, more critical determinants of satisfaction and commitment.

The current study did not, however, assess the often-hypothesized links between efficacy beliefs and subsequent task performance. Previous research suggests a likely link between these variables at the individual level (Bandura, 1986; Bandura & Cervone, 1983, 1986; Locke et al., 1984; Mathieu et al., 1993; Riggs, 1989). To the extent that individual persistence and performance contribute to group performance, personal efficacy could be a critical variable in any model that attempts to explain group performance.

If further investigation supports the general viability of the proposed model, successful organizational implementation of the model should be based on measurement of key variables in the model and appropriate diagnosis of organizational deficiencies. Refined diagnosis enables what cognitive psychologists refer to as a better definition of the problem space. This is the critical first step in any problem-solving procedure. Subsequent interventions can then be more successfully targeted at specific problematic variables within the model. For example, if the weak link in the chain is the lack of perceptions of contingencies between individual performance and subsequent rewards (personal outcome expectancy), the fix for this problem is much different from the strategy that would be implemented to correct a lack of faith within work groups that they have the ability necessary to complete work assignments successfully (collective efficacy).

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(Appendix follows on next page)

Appendix

Instructions and Items for Newly Developed Scales

Items marked with an asterisk were reverse scored.

Group Success–Failure Scale

Think about the department in which you work. Think about this department's recent ability to do its work and to accomplish its goals. This department may be an office group, an academic department, or a work crew (such as a point crew, the motor pool, a maintenance crew, etc.). When responding to the following items, answer in reference to your recent experiences within this department at work. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. The recent work of this department (refer to the above definition of a department) deserves an A+.
- *2. This department has been doing poor work.
3. This department has recently benefited because its performance was good.
4. As a group, this department has been meeting its goals.
- *5. As a group, this department has recently had some costly failures.
- *6. The past performance of this department has had little impact on the success of the larger organization as a whole.
7. Good things have happened because of the work done by this department.
- *8. The organization has recently suffered because of mistakes made by this department.
9. This department has recently accomplished some goals.

Personal Efficacy Beliefs Scale

Think about your ability to do the tasks required by your job. When answering the following questions, answer in reference to your own personal work skills and ability to perform your job. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. I have confidence in my ability to do my job.
- *2. There are some tasks required by my job that I cannot do well.
- *3. When my performance is poor, it is due to my lack of ability.
- *4. I doubt my ability to do my job.
5. I have all the skills needed to perform my job very well.
- *6. Most people in my line of work can do this job better than I can.
7. I am an expert at my job.
- *8. My future in this job is limited because of my lack of skills.
9. I am very proud of my job skills and abilities.
- *10. I feel threatened when others watch me work.

Personal Outcome Expectancy Scale

Think about the results of doing your job well OR doing your job poorly. Do important outcomes depend upon how well you perform, or do most job-related outcomes occur whether or not you do a good job? When answering the following questions, answer in reference to your

current job. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. I am well-rewarded for my good work.
- *2. Doing good work here is not worth the effort.
3. Performing your job well is a sure way to get ahead here.
- *4. Most of my good work goes unnoticed.
5. Around here, such things as salary and promotions are determined by how well a person does his or her job.
6. My work evaluations are accurate.
- *7. Good work gets the same results as poor work in this job.
8. I must do a good job in order to get what I want.

Collective Efficacy Beliefs Scale

Think about the department in which you work. This department may be an office group, a maintenance crew, an academic department, etc. When responding to the following items, answer in reference to this group's work-related ability. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. The department I work with has above average ability.
- *2. This department is poor compared to other departments doing similar work.
- *3. This department is not able to perform as well as it should.
4. The members of this department have excellent job skills.
- *5. Some members of this department should be fired due to lack of ability.
- *6. This department is not very effective.
- *7. Some members in this department cannot do their jobs well.

Collective Outcome Expectancy Scale

Think about the department in which you work. This department may be an office group, a maintenance crew, an academic department, etc. Think about the results of this department doing its job well OR doing its job poorly. Do important outcomes depend upon the department's performance, or do most job-related outcomes occur whether or not the department does a good job? When answering the following questions, answer in reference to your beliefs about your current department. Respond with "SA" for "strongly agree," "A" for "agree," "AS" for "agree somewhat," "DS" for "disagree somewhat," "D" for "disagree," and "SD" for "strongly disagree."

1. It is important for our group to do good work.
2. Many people benefit when our group does good work.
- *3. No one would notice if our group did its work poorly.
4. This organization depends heavily upon the quality of work my group does.
- *5. This organization does not need the work done by this group.
6. My group expects good outcomes when we do good work.

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